MARY C. RABBIT HISTORY OF GEOLOGY AWARD

Presented to
Leonard Gilchrist Wilson

Leonard G. Wilson
University of Minnesota (emeritus)

Citation by Robert H. Dott

I am honored to present to the Division Professor Leonard G. Wilson, Emeritus Professor and Head of the Department of the History of Medicine of the University of Minnesota to receive the 2013 Mary C. Rabbit Award for his outstanding contributions to the history of geology.

Leonard is a native of Canada. He studied at Toronto, then London, and wisely chose the University of Wisconsin for the Ph.D., which he received in 1958. He has held positions at UC-Berkeley, Cornell, Yale and Minnesota, where he retired in 1998. Leonard Wilson has published extensively in the history of biology and medicine, but is best known to geologists for his biographical studies of Charles Lyell represented in three books and several articles.

Not surprisingly, it was Charles Lyell who brought us together. Our Division's 1990 awardee, Gordon Y. Craig of Edinburgh University, presented me as Chair of the Division a copy of Lyell's handwritten notes for a lecture Number 9, which had been presented in Philadelphia in 1842. I mistakenly thought this an important find, but, alas, soon learned that twelve lectures had been presented and had been summarized in a newspaper account. Leonard cheered me up by urging that I do a study of all of Lyell's American lectures and offered to share copies of handwritten notes for all lectures. Moreover, in recent years, we have been together at several meetings dedicated to Lyell. Notable were the 1995 international meeting on Volcanoes and History, which included a field trip on Mount Etna, and the 1997 symposium celebrating the 200th anniversary of the death of Hutton and birth of Lyell. Besides the hallowed ground of Siccar Point, we visited Kinnordy, Scottish seat of the Lyell family where Leonard prepared a fine exhibit from the Kinnordy archives.

Besides his principal interest in Charles Lyell's geology, Leonard's publications include the emergence in the United States of science in general as well as geology, the antiquity of man, the species question, Archibald Geikie and the elevation of Scotland, and Lord Kelvin's estimates of the age of the Earth.

Leonard Wilson is one of the few professional historians of science who have reached across the unfortunate gap between professionally trained historians of science and practicing scientists interested in history. Furthermore, he has attended field trips and made excursions on his own to places important to his research. His career demonstrates the great value of such interactions.

Response by Leonard G. Wilson

It is an honor to receive the Mary C. Rabbitt Award and thereby to join the illustrious succession of recipients of that award. They began with Claude Albritton, who just fifty years ago organized a symposium on the principle of uniformity in geology for the seventy-fifth anniversary meeting of the Geological Society of America, held at New York City in November 1963. At the invitation of Claude Abritton, I participated in that symposium.

At the beginning of the symposium volume, which Albritton edited, he included conflicting statements about geological uniformity by various authors including the Dutch theologian Reijer Hooykaas. Hooykaas wrote that uniformity is not "a rule established after comparison of facts, but a methodological principle, preceding the observation of facts." Albritton was troubled by Hooykaas's opinion. It may have been a reason why he organized a symposium on uniformity. What Hooykaas wrote was just the opposite of the truth. The observation of many facts preceded Charles Lyell's development of the principle of uniformity in geology and sustained that principle thereafter.

In 1963 my work on Charles Lyell was at an early stage, but I knew already that Lyell's confidence in the continuity of the geological past with the present was based upon extensive field observation. In his Principles of Geology, published in 1830, and in eleven subsequent editions, Lyell introduced a profound change in geological thought. Most geologists then thought that the geological past was marked by violent change, in contrast to the relative calm of the modern world. Lyell demonstrated that the present earth was undergoing constant change and that slow relentless changes had occurred throughout the geological past. The earth was in a constant state of dynamic activity.

Lyell's view of earth history grew out of his observations. In Scottish lakes he observed modern limestones of a type previously thought to occur only among Tertiary strata. In central France, he saw that volcanic eruptions had occurred there at intervals over long periods of time. Older than the volcanic rocks was a fresh-water formation of laminated marls, the paper-thin layer separated by myriads of the fossil crustacean Cypris, accumulated in former lakes over many thousands of years. From his familiarity with the life of ponds in the New Forest of Hampshire, and of lakes in Scotland, Lyell recognized not only Cypris but also Caddis fly larva cases and the green alga Chara as regular inhabitants of fresh water.

In Sicily, Lyell was astounded by a hard limestone containing only casts of shells, overlying a soft blue marl full of fossil shells of living Mediterranean species. The ancient-appearing limestone was actually younger than the blue marl. Furthermore, the present marine life of the Mediterranean was older than the rocks of Sicily and they in turn were older than the great mass of the volcano of Etna, which rose above them.

From such observations, Lyell perceived earth history as extending back through an endless vista of past time.

Today the earth is calculated to be some 4,650 million years old. Throughout almost all of that time, the earth, though constantly active, has remained remarkably stable. In 1987 the geologist E. G. Nisbet commented: "the Archaean ocean was not necessarily hotter than today. In fact, it is one of the most remarkable aspects of life on Earth that the surface temperature has remained within the stability field of liquid water for perhaps 4 x 109 years — uniformity indeed!" Since Nisbet wrote, the discovery in Greenland, northwestern Canada, and western Australia of sedimentary rocks even older than those he knew has further lengthened the time in which liquid water has existed on the earth's surface.

Throughout his life, Lyell sought analogies between former geological features

and their modern counterparts. In 1842 he was fascinated by the formation of rain-drop impressions at low tide on the tidal flats of the Bay of Fundy in Nova Scotia.

When a shower of rain falls, the highest portion of the mud-covered flat is usually too hard to receive any impressions, while that recently uncovered by the tide near the water's edge is too soft. Between these areas a zone occurs almost as smooth and even as a looking glass, on which every drop forms a cavity ... and if the shower be transient, these pits retain their shape, being dried by the sun....

Rain-drop impressions thus evoked a vision of sun and wind and large drops of rain from a passing cloud falling on an ancient beach at low tide. After Lyell drew attention to rain-drop impressions, William Redfield found them in Triassic strata in New Jersey and Richard Brown in Carboniferous strata in Cape Breton Island.

The exact observation of such facts as rain-drop impressions illuminated the similarity of the geological past to the present. That similarity was the basis for Charles Lyell's confidence in the uniformity of the geological past with the present.